



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,710	06/01/2001	Vanessa Z.H. Chan	M0925/7067	5662
7590 Timothy J Oyer Wolf Greenfield & Sacks Federal Reserve Plaza 600 Atlantic Avenue Boston, MA 02210-2211			EXAMINER CHANG, VICTOR S	
			ART UNIT 1771	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/12/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/720,710

Applicant(s)

CHAN ET AL.

Examiner

Victor S. Chang

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-148 is/are pending in the application.
- 4a) Of the above claim(s) 2-16, 18-22 and 25-148 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 17, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Introduction

1. Applicants' declaration, amendments and remarks filed on 12/22/2006 have been entered. Claims 1, 17, 23 and 24 are active.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Rejections Based on Prior Art

3. Claims 1, 17 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. [Macromolecules, 22, pp. 2602 and 2604-2606].

Lee's paper [Introduction; pp. 2602-2603] relates a porous membrane prepared from a film of block copolymer synthesized by anionic polymerization of poly(4-vinylphenyl)dimethyl-2-propoxysilane and poly(isoprene). Depending on architecture of the block copolymer and casting conditions, periodic microstructures of the porous membrane can be formed by controlled morphology of the segregated domains of the block copolymer. After crosslinking the poly(4-vinylphenyl)dimethyl-2-propoxysilane domain, the poly(isoprene) block is decomposed to form a continuous hollow domain through the membrane. Narrow molecular weight distributions of the block lengths of the copolymer result in uniform micropores. Micrographs of the block copolymer films I and II, and the resulting porous membrane reveal that the periodic microstructures of the original block copolymer are directly reflected in the shape and size of the micropores.

Art Unit: 1771

For claims 1 and 17, it is calculated that the atomic% of silicon atom in the terminal blocks of poly(4-vinylphenyl)dimethyl-2-propoxysilane is $1/35 = 2.86$ atomic%, i.e., it is about 3 atomic% as claimed. As to the limitation "an inorganic species capable of forming a ceramic oxide", since the claimed limitation is optional, there is no requirement for the prior art to provide or account for the limitation, i.e., it does not constitute a limitation in any patentable sense.

For claim 23, Lee discloses that glass transition temperature of the terminal silicon containing block is about 465°K (193°C), which is greater than 0°C (pp. 2603).

4. Claim 24 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lee et al. [Macromolecules, 22, pp. 2602 and 2604-2606].

The teachings of Lee are again relied upon as set forth above.

For claim 24, Lee discloses that the terminal silicon containing block has average degree of polymerization of 100 (pp. 2602-2603), or average molecular weight of 22,000, i.e., about 30,000. Alternatively, since Lee discloses the same subject matter for the same use (a porous membrane having periodic microstructures) as the instant invention, and teaches that depending on the architecture of the block copolymer, the shape and size micropores can be designed, a suitable average molecular weight of the silicon containing block is deemed to be either anticipated by Lee, or an obvious routine optimization, motivated by the desire to obtain designed micropore sizes required by end use.

Response to Argument

5. Referring to the declaration by Thomas, applicants argue at Remarks pages 23-24 that Lee's membranes formed from block copolymers have discrete structure of physically isolated domains, whereas the present invention has topologically continuous structure. Further, the declaration argues that Lee reference specifically states that the porous membranes formed from spherical domains show "discontinuous sphere like microphase separation," and Lee describes continuous channels through the membrane in the sense of particular channel spans the membrane in one direction, not a topologically continuous domain in all directions. However, Thomas has apparently taken Lee's teachings out of context, and overlooked that Lee merely demonstrates that the architecture of the block copolymer, the shape and size micropores can be designed, and exemplified in block copolymer V that when the polyisoprene block is short, it becomes discontinuous and suggesting forming sphere and/or cylinder type microphase separation [Fig. 3 and Table V], whereas with sufficient polyisoprene block length (molecular weight), block copolymers I and II forms microporous membranes with a three-dimensionally periodic structure and their hollow domains are topologically continuous throughout the membrane structure. Finally, nowhere has Lee disclosed any continuous channels in a sense of particular channel spans the membrane in one direction, applicants appear to analyze the prior art in a vacuum without any factual support.

Applicants argue at page 24 that there is no suggestion or motivation in Lee to modify the teachings of Lee, independent claim 1 is patentable over Lee. However, since Lee in fact fully anticipates claim 1, the rejection over Lee under 35 U.S.C. 103(a) has been withdrawn, and applicants' argument is moot.

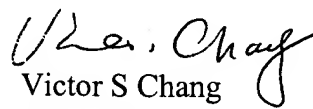
Art Unit: 1771

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor S. Chang whose telephone number is 571-272-1474. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H. Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Victor S Chang
Examiner
Art Unit 1771

2/7/2007